communications

MAINTENANCE MANUAL

TYPE 99 TONE DECODER

MODEL 4EJ12B10-13

SPECIFICATIONS *

Combination and Model Numbers	2-Reed	4-Reed
Mobile (±12 VDC)	D22 (4EJ12B10)	D24 (4EJ12B11)
Station (117-VAC, 50/60 cps)	D42 (4EJ12B12)	D44 (4EJ12B13)
Tone Frequencies	517.5 to 997.5 cps	
Tone Input	20 millivolts to 6 volts RMS	
Power Requirements		
Mobile	22 milliamps (standby) 250 milliamps (operating)	
Station	13 watts	
Temperature Range	-30°C to +60°C (-22°F to 144°F)	

*These specifications are intended primarily for the use of the serviceman. Refer to the appropriate Specification Sheet for the complete specifications.

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WARNING

No one should be permitted to handle any portion of the equipment that is supplied with high voltage; or to connect any external apparatus to the units while the units are supplied with power. KEEP AWAY FROM LIVE CIRCUITS.

DESCRIPTION

General Electric Type 99 Decoders are transistorized sequential tone decoders for mobile and station applications. The decoders will operate with any encoders providing two-tone sequential signaling. These include the General Electric Type 99 Encoders (100 and 900 Call Encoders and Dial Page Terminals).

The mobile decoders are supplied in a compact housing that is equipped with a mounting bracket for installation in 12-volt vehicles. Station decoders are supplied with a larger housing which contains a 117-volt power supply.

INSTALLATION

MOBILE DECODER

Install the Mobile Decoder where it will be within convenient reach of the operator, and where it will not interfere with the safe operation of the vehicle. Use the mounting bracket as a template, and drill pilot holes with a #29 (9/64-inch) drill. Attach the bracket to the mounting surface with the two #10 x 5/8-inch self tapping screws provided.

Connections for different mobile installations are shown on the appropriate Application Kit as listed in the Table of Contents.

STATION DECODER

The Station Decoder should be located near a 117 VAC, 50/60 cps source, and where the control cable will reach the station. Connections for the different station installations are shown on the appropriate Application Kit as listed in the Table of Contents.

BUZZER AND HOOKSWITCH OPTIONS

Instructions for installing and connecting the buzzer or hookswitch options are shown on the Outline and Schematic Diagram for the Decoder.

JUMPER CONNECTIONS

Refer to the Jumper Option Chart on the Outline Diagram for a description of the options and the proper jumper connections.

OPERATION

Operating controls for the decoders are located on the front panel. The controls include a RESET button, a CALL lamp and an EXTERNAL ALARM switch marked LIGHT-OFF-HORN.

MOBILE DECODER

The basic mobile decoder is supplied with one output relay (K1). When a signal that is modulated by the proper tone is received, relay K1 locks up and the CALL lamp lights. Pressing the RESET button unlocks the relay and cuts off the CALL lamp. If desired, one set of contacts on K1401 can be used to activate an external alarm. The position of the EXTERNAL ALARM switch determines which external alarm (LIGHT or HORN) will operate.

An optional relay (K1402) can be plugged into the socket provided on the circuit board. The optional relay permits relay K1401 to be connected for timed operation (3 to 5 seconds), and K1402 to operate locked to the reset button. Other options include a hookswitch for either a handset or military microphone for off-hook monitoring and reset, and a buzzer that is activated by the timed relay.

STATION DECODER

The basic station decoder is supplied with both relays, a timed buzzer, an internal CALL light, and provision for an external alarm (LIGHT or HORN). Options include the microphone or handset hookswitch for off-hook monitoring and reset. No provision is made for monitoring the base station when speaker muting is used.

CIRCUIT ANALYSIS

Audio from the output transformer of the mobile or station receiver is passed through T1401 (which provides DC isolation and voltage gain between the receiver output and the input circuit of the decoder) to a pair of clipping diodes CR1404 and CR1405. These diodes limit the input to the reed drive amplifiers (Q1401 and Q1402) to approximately 300 millivolts. A Zener regulator (CR1406) holds the supply voltage constant to the amplifier. Thus a constant drive voltage is applied across the reeds. If speaker muting is employed, the radio receiver output transformer is loaded by R1401 when the speaker is disconnected from the transformer.

When the first tone of a two-tone sequential call is received, reed FL1401 responds. The reed is an electromechanical device resonant only to the desired first tone of the selective-calling code. The contacts of FL1401 close, charging C1401 from the positive supply voltage through R1403.

CIRCUIT ANALYSIS

When the second tone is received, reed FL1402 responds. The reed contacts close, permitting the current from C1401 to charge C1402 through R1405. As the voltage rises across C1402, current flows from the capacitor through CR1401, R1407 and through the base-emitter junction of Q1403. When Q1403 conducts, a heavy base current flows in the base-emitter junction of Q1404. This current overcomes the back-bias provided by CR1403, CR1409 and R1428, permitting Q1404 to conduct. The resulting collector current of Q1404 operates relay K1401.

K1401 normally locks up through its own contacts 9 and 10. K1401 contacts 12 and 13 close to turn on CALL lamp DS1401. RESET switch S1402 must be depressed momentarily to unlock K1401. If the PL-19C303571-G1 Hookswitch is used, K1401 may be locked-up under the control of the hookswitch, S1402 or both.

K1401 may also be timed for a 3 to 5 second interval. In this case, C1404 discharges into the base of Q1403 through R1411. Q1403 conducts, causing Q1404 to conduct for the timing period.

If K1402 is used, contacts 15 and 16 of K1401 close the path to K1402, permitting this relay to operate. K1402 is always wired for locked operation. K1401 will always be wired for timed operation under these conditions. K1402 may be locked under the control of S1402, the hookswitch or both.

Switch S1401 determines which external alarm will be operated. Contacts on K1401, K1402 or both may be used for external alarm, depending on jumper connections. Refer to the Option Chart 19B204844 on the Outline Diagram to determine the connections used. A momentary closure is used for external horn while a locked closure is used for external light.

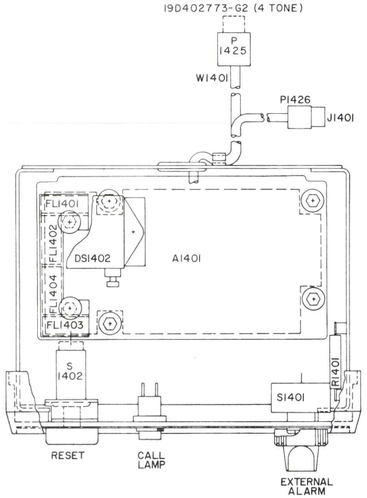
Models 4EJ12A12 and A13 contain the AC power supply. A full-wave bridge (CR501-CR504) rectifies the 117-volts AC applied across T501. Filtering is accomplished by the dial-section capacitor (C501) and R501. Zener diode CR505 provides a regulated 11-volts DC at the output terminals. An unregulated tap at R501-2 provides 15-VDC for operating the CALL lamp, buzzer and K1402.

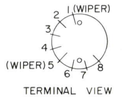
MAINTENANCE

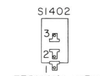
To remove the chassis for servicing, remove the four screws in the back of the decoder and pull the chassis out of the housing. Refer to the voltage readings on the Outline Diagram for troubleshooting the unit.

MOBILE DECODER

19D402773-G1 (2 TONE)
19D402773-G2 (4 TONE)

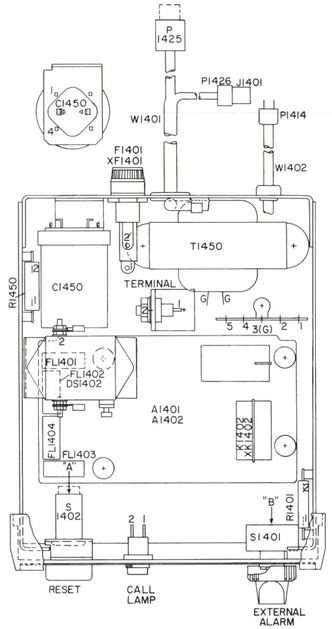






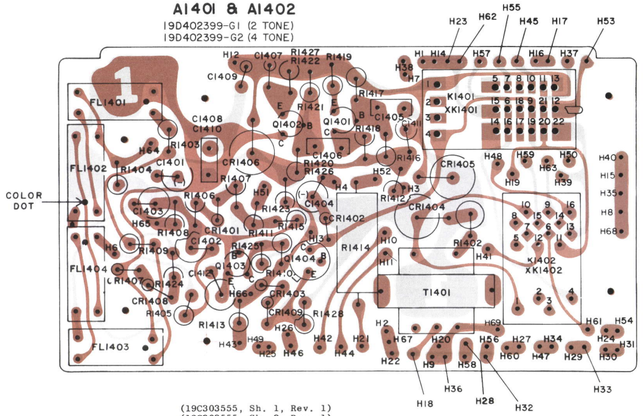
STATION DECODER

19D402774-G1 (2 TONE)
19D402774-G2 (4 TONE)

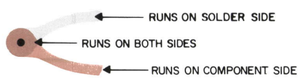


A1401 & A1402

19D402399-G1 (2 TONE)
19D402399-G2 (4 TONE)



(19C303555, Sh. 1, Rev. 1)
(19C303555, Sh. 2, Rev. 1)



CALL SEQUENCE

1. INDIVIDUAL CALL ONLY (2 REEDS)
   MODELS 4EJ12A10 & A12 (PL-19C303570-G1 & PL-19C303631-G1)
   1ST TONE — FL1401; 2ND TONE — FL1402
2. INDIVIDUAL CALL WITH ALL OR GROUP CALL (4 REEDS)
   MODELS 4EJ12A11 & A13 (PL-19C303570-G2 & PL-19C303631-G2)
   INDIVIDUAL CALL SAME AS 1 ABOVE
   ALL OR GROUP CALL SEQUENCE
   1ST TONE — FL1403; 2ND TONE — FL1404
3. INDIVIDUAL CALL WITH ALL AND GROUP CALL (4 REEDS)
   INDIVIDUAL CALL AND ALL CALL SAME AS 2 ABOVE
   GROUP CALL SEQUENCE WITH JUMPER CONNECTED BETWEEN H64 & H65
   1ST TONE — FL1401; 2ND TONE — FL1404

VOLTAGE READINGS

1. DECODER (POWER SUPPLY 13.6 VOLT BATTERY)
   ALL READINGS TAKEN WITH 20,000 OHMS-PER-VOLT METER TO NEGATIVE COMMON (H12).

NO TONE	PROPER TONE CODE BEING RECEIVED
Q1401 E-0.1 VOLT B-0.6 VOLT C-5.2 VOLTS	NO CHANGE
Q1402 E-5.0 VOLTS B-5.5 VOLTS C-7.7 VOLTS	NO CHANGE
Q1403 E-0 B-0 C-13.6 VOLTS	0 SWINGS UP TO 0.6 V MOMENTARILY SWINGS DOWN TO 0.6 V MOMENTARILY
Q1404 E-12.4 VOLTS B-13.6 VOLTS C-0	SWINGS DOWN TO 11.8 V SWINGS DOWN TO 11.5 V SWINGS UP TO 7.5 V MOMENTARILY

WITH 20 MILLIVOLTS RMS OF TONE AT INPUT TO DECODER, AC RMS VOLTAGE FROM Q1402 COLLECTOR TO COMMON NEGATIVE SHOULD READ BETWEEN 1.8 AND 2.4 VOLTS.
WITH 1.0 VOLT RMS OF TONE AT INPUT TO DECODER, OUTPUT SHOULD READ BETWEEN 1.8 AND 2.4 VOLTS RMS.

2. AC POWER SUPPLY (117 VOLTS AC 50/60-CPS)
   READINGS TAKEN WITH 20,000 OHMS-PER-VOLT METER, CHASSIS COMMON
   R501-2 (RED) 14.8-17.2 VOLTS DC.
   R501-1 (ORANGE) 10.3-11.8 VOLTS DC.
   THE LATTER READING SHOULD NOT CHANGE MORE THAN 0.5 VOLT FROM NO LOAD TO FULL LOAD CONDITIONS.

JUMPER CHART

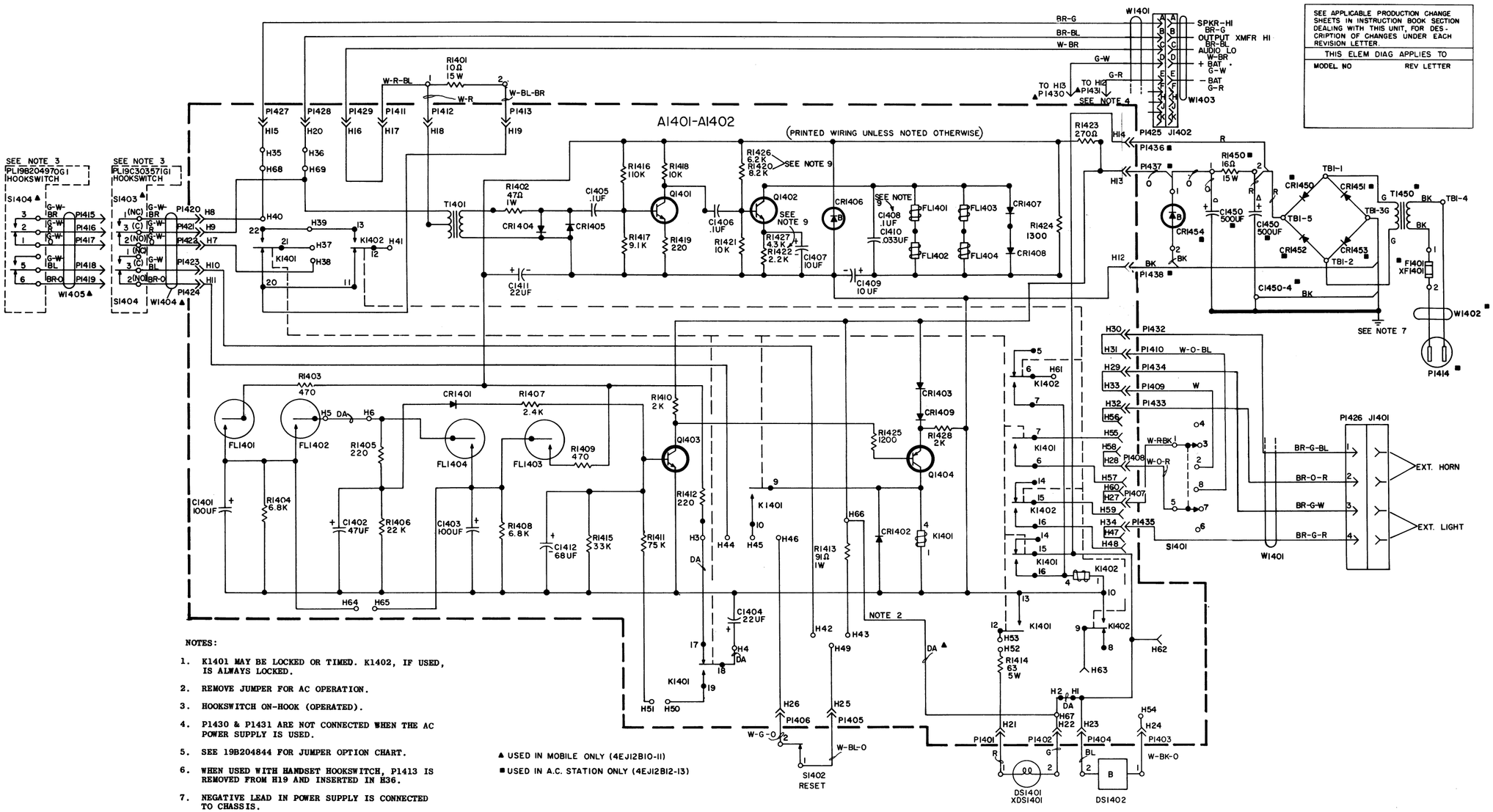
OPTION	DESCRIPTION	JUMPER
Basic Unit (Mobile)	No Speaker Muting	H35-H36
	One Relay (K1401), locked to reset button	H49-H43, H46-H45
	Internal call light	H52-H53
	External call light	H55-H60, H57-H47
Basic Unit (AC)	No speaker muting	H35-H36
	K1401 timed	H50-H51
	K1402 locked to reset button	H61-H49, H46-H62
	Timed buzzer	H54-H53
	External momentary alarm	H55-H56, H57-H58
	Internal call light	H63-H52
	External call light	H59-H60, H48-H47
Option 4096 Only	No speaker muting	H35-H36
	K1401 Timed	H50-H51
	K1402 locked to reset button	H61-H49, H46-H62
	Timed buzzer	H54-H53
	External horn	H55-H56, H57-H58
	Internal call light	H63-H52
	External call light	H59-H60, H48-H47
Option 4092 only	Speaker unmuted by Mil. hookswitch or K1401	H39-H40, H37-H38
	K1401 locked to Mil. hookswitch or reset button	H42-H43, H44-H49, H45-H46
	External call light	H55-H60, H57-H47
	Internal call light	H52-H53
Options 4096 & 4092	Speaker unmuted by Mil. hookswitch or K1402	H39-H40, H41-H38
	K1401 timed	H50-H51
	K1402 locked to H.S. or reset button	H61-H44, H42-H46, H49-H62
	Timed buzzer	H54-H53
	External call light	H59-H60, H48-H47
	Internal call light	H63-H52
	External horn	H55-H56, H57-H58
Option 4093 Only	Extension Cable option (19A121588G1)	If no other options are included, jumper for basic unit.
Option 4094 Only	Speaker unmuted by Handset Hookswitch or K1401	H39-H40, H37-H38
	K1401 locked to handset Hookswitch or Reset Button	H42-H43, H44-H49, H45-H46
	External call light	H55-H60, H57-H47
	Internal call light	H52-H53
	Remove P1413 from H19 and insert in H36	

(19B204844, Sh. 1, Rev. 5)
(19B204844, Sh. 2, Rev. 0)

OUTLINE DIAGRAM

TYPE 99 TONE DECODER MODELS 4EJ12B10-13

4 (19D402826, Rev. 0)



NOTES:

1. K1401 MAY BE LOCKED OR TIMED. K1402, IF USED, IS ALWAYS LOCKED.
2. REMOVE JUMPER FOR AC OPERATION.
3. HOOKSWITCH ON-HOOK (OPERATED).
4. P1430 & P1431 ARE NOT CONNECTED WHEN THE AC POWER SUPPLY IS USED.
5. SEE 19B204844 FOR JUMPER OPTION CHART.
6. WHEN USED WITH HANDSET HOOKSWITCH, P1413 IS REMOVED FROM H19 AND INSERTED IN H36.
7. NEGATIVE LEAD IN POWER SUPPLY IS CONNECTED TO CHASSIS.
8. ALL WIRES ARE N22 UNLESS OTHERWISE SPECIFIED.
9. FOR R1427, R1426 AND C1410 SEE G1 OF PL-19D402399 FOR R1420, R1422 AND C1408 SEE G2 OF PL-19D402399.
10. HOLES 7 THRU 65, H68 AND H69 ARE JACKS.

▲ USED IN MOBILE ONLY (4EJ12B10-11)

■ USED IN A.C. STATION ONLY (4EJ12B12-13)

SCHEMATIC DIAGRAM

TYPE 99 TONE DECODER MODELS 4EJ12B10-13

(19R620778, Rev. 1)

PARTS LIST

LBI-3761
TYPE 99 DECODERS

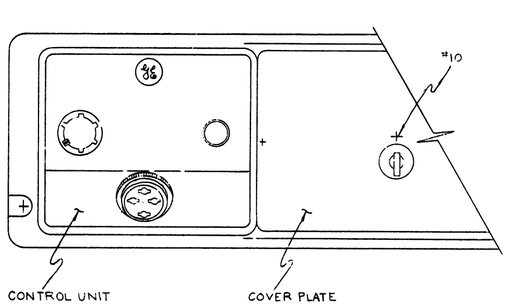
MODELS 4EJ12B10, 11 (PL-19D402773-G1, 2)
MODELS 4EJ12B12, 13 (PL-19D402774-G1, 2)

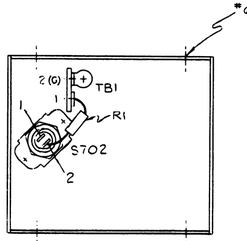
SYMBOL	G-E PART NO.	DESCRIPTION
		- - - - - - - - - SUBASSEMBLIES - - - - - - - - -
A1401 and A1402		COMPONENT BOARD
		A1401 PL-19D402399-G1 (Models 4EJ12B10, 12)
		A1402 PL-19D402399-G2 (Models 4EJ12B11, 13)
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1401	5496267-P7	Tantalum, dry solid: 100 µf ±20%, 10 VDCW; sim to Sprague Type 150D.
C1402	5496267-P15	Tantalum, dry solid: 47 µf ±20%, 20 VDCW; sim to Sprague Type 150D.
C1403	5496267-P7	Tantalum, dry solid: 100 µf ±20%, 10 VDCW; sim to Sprague Type 150D.
C1404	5496267-P10	Tantalum, dry solid: 22 µf ±20%, 15 VDCW; sim to Sprague Type 150D.
C1405 and C1406	5492638-P107	Ceramic disc: 0.1 µf +80% -20%, 12 VDCW; sim to Sprague 20C202.
C1407	5491674-P2	Tantalum, dry solid: 10 µf ±20%, 10 VDCW; sim to Sprague 162D106X0010BA2.
C1408	5492638-P107	Ceramic disc: 0.1 µf +80% -20%, 12 VDCW; sim to Sprague 20C202. (Used in Models 4EJ12B11, 13).
C1409	5491674-P2	Tantalum, dry solid: 10 µf ±20%, 10 VDCW; sim to Sprague 162D106X0010BA2.
C1410	7491930-P7	Polyester: .033 µf ±20%, 100 VDCW; sim to G-E Type 61F. (Used in Models 4EJ12B10, 12).
C1411	5496267-P10	Tantalum, dry solid: 22 µf ±20%, 15 VDCW; sim to Sprague Type 150D.
C1412	5496267-P11	Tantalum, dry solid: 68 µf ±20%, 15 VDCW; sim to Sprague Type 150D.
		- - - - - - - DIODES AND RECTIFIERS - - - - - - -
CR1401	4038056-P1	Germanium.
CR1402 and CR1403	4037822-P1	Silicon.
CR1404 and CR1405	5495920-P1	Germanium; sim to Type 1N91.
CR1406	19A115008-P15	Silicon, Zener.
CR1407 and CR1408	19A115250-P1	Silicon.
CR1409	4037822-P1	Silicon.
		- - - - - - - - - TONE NETWORKS - - - - - - - - -
FL1401 thru FL1404	PL-19C300580	Tone Detector. (Check group numbers for desired frequency).
	PL-19C300580-G1	517.5 cps
	-G2	532.5 cps
	-G3	547.5 cps
	-G4	562.5 cps
	-G5	577.5 cps
	-G6	592.5 cps
	-G7	607.5 cps
	-G8	622.5 cps
	-G9	637.5 cps
	-G10	652.5 cps
	-G11	667.5 cps
	-G12	682.5 cps
	-G13	697.5 cps
	-G14	712.5 cps
	-G15	727.5 cps
	-G16	742.5 cps
	-G17	757.5 cps
	-G18	772.5 cps
	-G19	787.5 cps
	PL-19C300580-G20	802.5 cps
	-G21	817.5 cps
	-G22	832.5 cps
	-G23	847.5 cps
	-G24	862.5 cps
	-G25	877.5 cps
	-G26	892.5 cps
	-G27	907.5 cps
	-G28	922.5 cps
	-G29	937.5 cps
	-G30	952.5 cps
	-G31	967.5 cps
	-G32	982.5 cps
	-G33	997.5 cps
		- - - - - - - - - - RELAYS - - - - - - - - - -
K1401	19C307010-P7	Armature: 11 VDC nominal, 1.5 w max operating, 90 ohms ±10% coil res, 3 form A, 3 form C contacts sim to Allied Control T154-X-458.
K1402	19C300957-P2	Miniature, plug-in: 12 VDC nominal, 1.5 w max operating, 185 ohms ±10% coil res, 4 form C contacts; sim to Allied Control T154-X-316.
		- - - - - - - - - TRANSISTORS - - - - - - - - -
Q1401 thru Q1403	19A115123-P1	Silicon, NPN; sim to Type 2N2712.
Q1404	19C300073-P2	Germanium, PNP; sim to Type 2N1414.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1402	3R78-P470J	Fixed composition: 47 ohms ±5%, 1 w.
R1403	3R77-P471K	Fixed composition: 470 ohms ±10%, 1/2 w.
R1404	3R77-P682K	Fixed composition: 6800 ohms ±10%, 1/2 w.
R1405	3R77-P221J	Fixed composition: 220 ohms ±5%, 1/2 w.
R1406	3R77-P223J	Fixed composition: 22,000 ohms ±5%, 1/2 w.
R1407	3R77-P242J	Fixed composition: 2400 ohms ±5%, 1/2 w.
R1408	3R77-P682K	Fixed composition: 6800 ohms ±10%, 1/2 w.
R1409	3R77-P471K	Fixed composition: 470 ohms ±10%, 1/2 w.
R1410	3R77-P202J	Fixed composition: 2000 ohms ±5%, 1/2 w.
R1411	3R77-P753J	Fixed composition: 75,000 ohms ±5%, 1/2 w.
R1412	3R77-P221J	Fixed composition: 220 ohms ±5%, 1/2 w.
R1413	3R78-P910J	Fixed composition: 91 ohms ±5%, 1 w.
R1414	5493035-P17	Wirewound: 63 ohms ±5%, 5 w; sim to Tru-Ohm Type X-60.
R1415	3R77-P333K	Fixed composition: 33,000 ohms ±10%, 1/2 w.
R1416	3R77-P114J	Fixed composition: 0.11 megohm ±5%, 1/2 w.
R1417	3R77-P912J	Fixed composition: 9100 ohms ±5%, 1/2 w.
R1418	3R77-P103J	Fixed composition: 10,000 ohms ±5%, 1/2 w.
R1419	3R77-P221J	Fixed composition: 220 ohms ±5%, 1/2 w.
R1420	3R77-P822J	Fixed composition: 8200 ohms ±5%, 1/2 w. (Used in Models 4EJ12B11, 13).
R1421	3R77-P103J	Fixed composition: 10,000 ohms ±5%, 1/2 w.
R1422	3R77-P222J	Fixed composition: 2200 ohms ±5%, 1/2 w. (Used in Models 4EJ12B11, 13).
R1423	3R77-P271J	Fixed composition: 270 ohms ±5%, 1/2 w.
R1424	3R77-P132J	Fixed composition: 1300 ohms ±5%, 1/2 w.
R1425	3R77-P122J	Fixed composition: 1200 ohms ±5%, 1/2 w.
R1426	3R77-P622J	Fixed composition: 6200 ohms ±5%, 1/2 w. (Used in Models 4EJ12B10, 12).
R1427	3R77-P432J	Fixed composition: 4300 ohms ±5%, 1/2 w. (Used in Models 4EJ12B10, 12).
R1428	3R77-P202J	Fixed composition: 2000 ohms ±5%, 1/2 w.
		- - - - - - - - - TRANSFORMERS - - - - - - - - -
T1401	5491609-P1	Audio: 0.3 to 3 KC freq range, 6 VDC operating, Pri: 500 ohms ±10% imp CT, 20 ohms ±10% DC res, Sec: 500 ohms ±10% imp, 22 ohms ±10% DC res.
		- - - - - - - - - SOCKETS - - - - - - - - -
XK1401	19B209172-P1	Relay, phen: 22 contacts; sim to Allied Control 30054-24.
XK1402	5491595-P7	Relay: 10 contacts; sim to Allied Control 30054-4.
		- - - - - - - - - CAPACITORS - - - - - - - - -
C1450	7770994-P28	Electrolytic, twist-prong: 500-500 µf +250% -10%, 25-25 VDCW; sim to Mallory Type WP. (Used in Models 4EJ12B12, 13).
		- - - - - - - DIODES AND RECTIFIERS - - - - - - -
CR1450 thru CR1453	4037822-P1	Silicon. (Used in Models 4EJ12B12, 13)
CR1454	5495912-P1	Silicon, Zener. (Used in Models 4EJ12B12, 13).
		- - - - - - - - INDICATING DEVICES - - - - - - - -
DS1401	19B201122-P1	Lamp, indicator: 6 v; sim to G-E 1768.
DS1402	19B200788-P3	Buzzer: 12 VDC or 12-16 VAC nominal, 200 ma DC operating; sim to Line Electric BD-1. (Used in Models 4EJ12B12, 13).
DS1402	PL-19A121580-G1	Buzzer: 12 VDC or 12-16 VAC nominal, 100 ma DC operating; sim to Line Electric BD-0 (modified). (Used in Models 4EJ12B10, 11).
		- - - - - - - - - - FUSES - - - - - - - - - -
F1401	7487942-P1	Slow blowing: 1/4 amp at 250 v; sim to Bussmann MDL-1/4. (Used in Models 4EJ12B12, 13).
		- - - - - - - - - - PLUGS - - - - - - - - - -
P1401 thru P1413	4036634-P2	Contact, electrical: sim to AMP 42429-2.
P1436 thru P1438	4036634-P2	Contact, electrical: sim to AMP 42429-2. (Used in Models 4EJ12B12, 13).
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1401	5496941-P21	Wirewound: 10 ohms ±5%, 15 w; sim to Tru-Ohm Type MOR-15.
R1450	5496941-P23	Wirewound: 16 ohms ±5%, 15 w; sim to Tru-Ohm Type MOR-15. (Used in Models 4EJ12B12, 13).
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S1401	5495454-P23	Rotary: 1 section, 2 poles, 3 positions, non-shorting contacts, 2 amps at 25 VDC or 1 amp at 110 VAC; sim to Oak Type "A" or Centralab Series 100.
S1402	19B209292-P2	Push: SPDT, 10 amps at 250 VAC; sim to Micro Switch 13DM1-B1.
		- - - - - - - - - TRANSFORMERS - - - - - - - - -
T1450	5493743-P1	Power: step-down, Pri: 117 v, 50/60 cycles, Sec 1: 12.6 v ±3%, 2 amps. (Used in Models 4EJ12B12, 13).
		- - - - - - - - TERMINAL BOARDS - - - - - - - -
TB1	7775500-P11	Phenolic: 5 terminals. (Used in Models 4EJ12B12, 13).
		- - - - - - - - - - CABLES - - - - - - - - - -
W1401		CABLE PL-19B204739-G1
		- - - - - - - JACKS AND RECEPTACLES - - - - - - -
J1401	5492497-P24	Shell, connector: 4 circuits; sim to AMP 480134-1.
		- - - - - - - - - - PLUGS - - - - - - - - - -
P1425	7489183-P10	Plastic: 9 contacts; sim to Winchester MSP-LS-H19C.
P1426	5492497-P14	Shell, connector: 4 circuits; sim to AMP 480135-1.
P1427 thru P1435	4036634-P2	Contact, electrical: sim to AMP 42429-2.
	5492497-P1	- - - - - - - - - MISCELLANEOUS - - - - - - - - - Contact: lock spring; sim to AMP 42485-1. (Used with J1401). Cable: 600 VRMS, approx 50 inches. Type AWG 22.
W1402	4036441-P8	Power: approx 8 feet, with 2-contact plug (P1414). Type AWG 18. (Used in Models 4EJ12B12, 13).
W1403		CABLE PL-19A121588-G1
		- - - - - - - JACKS AND RECEPTACLES - - - - - - -
J1402	7489183-P7	Socket, plastic: 9 contacts; sim to Winchester MSS-LR-H19C.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
		Cable: 600 VRMS, approx 12 inches. Type AWG 22.
		- - - - - - - ASSOCIATED ASSEMBLIES - - - - - - -
		MICROPHONE HOOKSWITCH PL-19C303571-G1 (Used in Models 4EJ12B10, 11)
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S1403 and S1404	19B209099-P1	Sensitive: SPDT, 10.1 amps at 125 VAC; sim to Cherry Electrical Products B62-10A.
		- - - - - - - - - - CABLES - - - - - - - - - -
W1404	PL-19B204731-G1	Cable. Includes:
P1420 thru P1424	4036634-P2	Contact, electrical: sim to AMP 42429-2.
		Cable: 600 VRMS, approx 50 inches. Type AWG 22.
		HANDSET HOOKSWITCH PL-19B204970-G1 (Used in Models 4EJ12B10, 11)
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S1405	19A121612-P1	Holder, handset: 2 form C contacts, 1 amp at 125 v max; sim to Telephone Components Brook-Tel 1010S (modified).
		- - - - - - - - - - CABLES - - - - - - - - - -
W1405	PL-19B204731-G1	Cable. Includes:
P1415 thru P1419	4036634-P2	Contact, electrical: sim to AMP 42429-2.
		Cable: 600 VRMS, approx 50 inches. Type AWG 22.
		- - - - - - - - - - SOCKETS - - - - - - - - - -
XDS1401	19B201122-P2	Lamp: sim to Drake Series 121.
XF1401	19B209005-P1	Fuseholder, post type, phen: 15 amps at 250 v; sim to Littelfuse 342012. (Used in Models 4EJ12B12, 13).
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	5491595-P9	Retainer, spring: sim to Allied Control 30040-2. (Used with K1402 in PL-19D402399 G1, 2).
	4036040-P1	Pin, contact: sim to American Brass 724. (Used in PL-19D402399 G1, 2).
	4036555-P1	Insulator, washer: nylon. (Used with Q1404 in PL-19D402399 G1, 2).
	19A115368-P1	Retainer, spring: sim to Allied Control 30040-3. (Used with K1401 in PL-19D402399 G1, 2).
	PL-19B205063-G4	Chassis. (Used in Models 4EJ12B10, 11).
	PL-19B205063-G3	Chassis. (Used in Models 4EJ12B12, 13).
	19B205054-P1	Front cap.
	NP249051-P1	Nameplate. (Used with front cap.).
	PL-19B205111-G1	Knob. (Used with S1401).
	19B201122-P6	Cap, lens: yellow translucent nylon, 3/8 inch dia. (Used with DS1401).
	7763541-P4	Clip, spring tension. (Used with W1401).
	5490407-P8	Grommet, rubber. (Used with W1401 in Models 4EJ12B10, 11).
	5490407-P6	Grommet, rubber. (Used with W1401 in Models 4EJ12B12, 13).
	7491987-P6	Bushing, strain relief: sim to Hyco SR-3P-1. (Used with W1402 in Models 4EJ12B12, 13).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

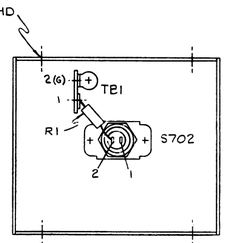
MASTR EXECUTIVE SERIES
MOBILE APPLICATION KIT 19A122352-G2

TRUNK-MOUNT





BACK VIEW OF CONTROL UNIT
4EC68A10



BACK VIEW OF CONTROL UNIT
4EC68A11 & A12

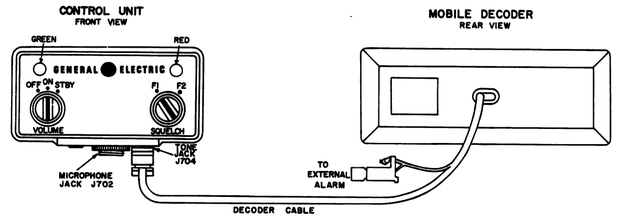
INSTRUCTIONS:

1. REMOVE COVER PLATE.
2. REMOVE #10 SCREW & REMOVE FRONT CASTING FROM FRAME.
3. REMOVE CONTROL UNIT & SWING TOWARD OUTSIDE TO EXPOSE BACK SIDE.
4. CLIP OUT DA JUMPER BETWEEN TB1-1 & S702-2 AND SOLDER R1(22) RESISTOR IN ITS PLACE.
5. REASSEMBLE CONTROL UNIT.
6. REASSEMBLE FRONT CASTING.
7. REASSEMBLE COVER PLATE.
8. ASSEMBLE ADAPTER CABLE (PL19B205414G1) BETWEEN SPEAKER & SPEAKER JACK ON UNIT.
9. PLUG TONE DECODER INTO ADAPTER CABLE.

(19C311064, Rev. 0)

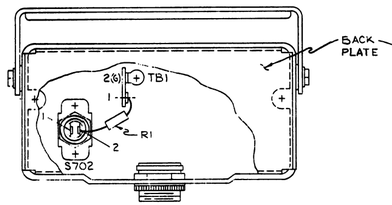
MASTR PROFESSIONAL SERIES

MOBILE APPLICATION



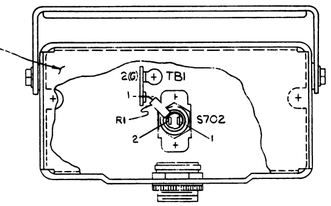
CONNECT PLUG ON DECODER CABLE TO TONE JACK J704 ON MASTR CONTROL UNIT.

FRONT-MOUNT



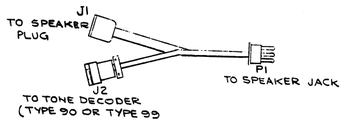
BACK VIEW OF CONTROL UNIT

4EC67A10



BACK VIEW OF CONTROL UNIT

4EC67A11 & A12



ADAPTER CABLE (PL19B205414)

INSTRUCTIONS:

1. REMOVE BACK PLATE FROM CONTROL UNIT TO GAIN ACCESS TO TB1 & S702.
2. CLIP OUT DA JUMPER BETWEEN TB1-1 & S702-2 AND SOLDER R1(22) RESISTOR IN ITS PLACE.
3. REASSEMBLE BACK PLATE.
4. ASSEMBLE ADAPTER CABLE (PL19B205414G1) BETWEEN SPEAKER & SPEAKER JACK ON CONTROL UNIT.
5. PLUG TONE DECODER INTO ADAPTER CABLE.

(19C311065, Rev. 1)

Installation Instructions

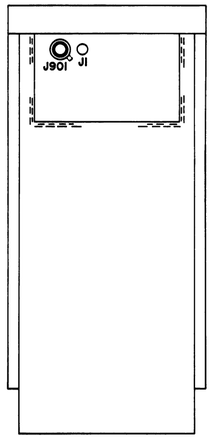
TONE APPLICATION KITS FOR MASTR PROGRESS LINE MOBILES PROFESSIONAL & EXECUTIVE SERIES

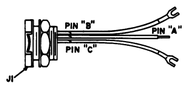
(RC-1285A)

MASTR DESK MATE
APPLICATION KIT 19B204966-G1

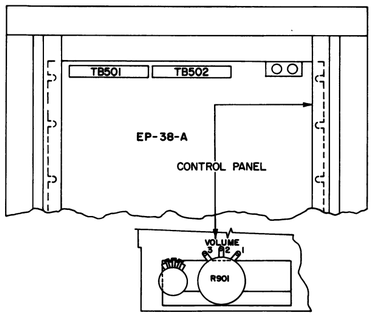
DESK-MATE APPLICATION KIT
PL19B204996G1

REAR VIEW OF DESK-MATE





SIDE VIEW OF DESK-MATE



STEP 1 MOUNT J1 IN CUTOUT BESIDE MIKE JACK (J901) IN THE CABINET REAR GRILL USING HARDWARE FURNISHED.

STEP 2 REMOVE HARNESS WIRE 20 BETWEEN TB502-5 ON EP-38A AND R901-1 ON CONTROL PANEL.

STEP 3 CONNECT GREEN-WHITE WIRE (FROM PIN B ON J1) TO TB502-5 ON EP-38-A.

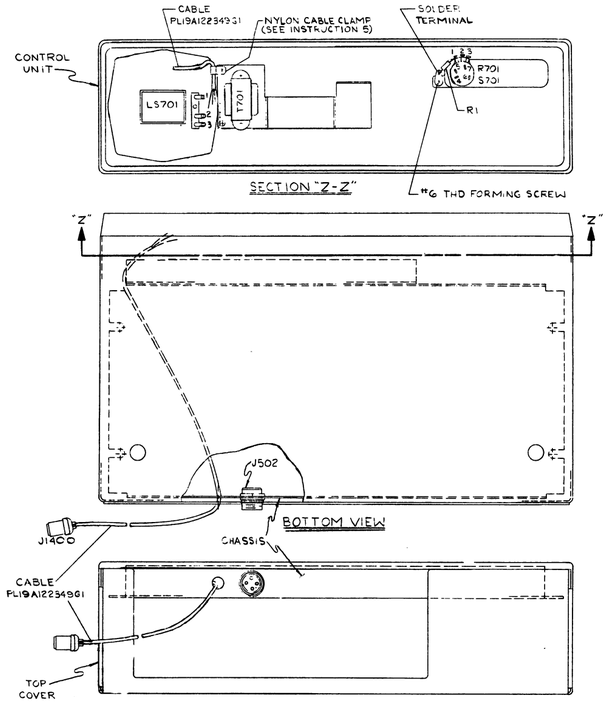
STEP 4 SOLDER BROWN-WHITE WIRE (FROM PIN A ON J1) TO R901-1 ON CONTROL PANEL.

STEP 5 CONNECT BLACK-WHITE WIRE (FROM PIN C ON J1) TO TB501-12 ON EP-38-A.

STEP 6 DRESS THESE WIRES ALONGSIDE EXISTING HARNESS AND SPOT TIE AS REQUIRED FOR NEAT CABLE DRESS.

STEP 7 CONNECT CABLE FROM DECODER TO J1.

MASTR DESK TOP
APPLICATION KIT 19A122352-G1



INSTRUCTIONS:

1. REMOVE TOP COVER.
2. REMOVE CONTROL UNIT FROM BOTTOM COVER (5 SCREWS) & LAY FACE DOWN.
3. REMOVE CHASSIS MOUNTING HARDWARE.
4. INSERT CABLE THROUGH HOLE IN REAR OF CHASSIS & RAISE CHASSIS SO THAT CABLE CAN BE ROUTED UNDER BOTTOM SIDE & UP TO CONTROL UNIT AS SHOWN.
5. ASSEMBLE CABLE CLAMP TO CABLE & MOUNT CLAMP UNDER HARDWARE THAT MOUNTS SUPPORT AS SHOWN.
6. REASSEMBLE CHASSIS.
7. IN CONTROL UNIT REMOVE DA JUMPER BETWEEN LS701-2 & LS701-3 WHEN HOOKSWITCH MUTE IS DESIRED.
8. FROM CABLE (PL19A122349G1): SOLDER RED WIRE TO LS701-3; SOLDER BLACK WIRE TO LS701-2; AND SOLDER SHIELD WIRE TO LS701-1.
9. IN CONTROL UNIT DISCONNECT SHIELD WIRE & N22-GWR WIRE FROM R701-1 & CONNECT TO SOLDER TERMINAL (WHICH IS TO BE ASSEMBLED AS SHOWN).
10. SOLDER R1(22Ω) RESISTOR FROM SOLDER TERMINAL TO R701-1 AS SHOWN.
11. REASSEMBLE CONTROL UNIT TO BOTTOM COVER.
12. REASSEMBLE TOP COVER.
13. PLUG TONE DECODER INTO CABLE.

(19C311066, Rev. 0)

Installation Instructions

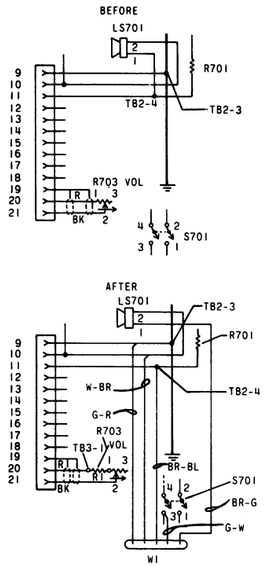
TONE APPLICATION KIT FOR
MASTR PROGRESS LINE
DESK MATE & DESK TOP STATIONS

(RC-1286A)

PROGRESS LINE APPLICATIONS

MOBILE APPLICATION KITS

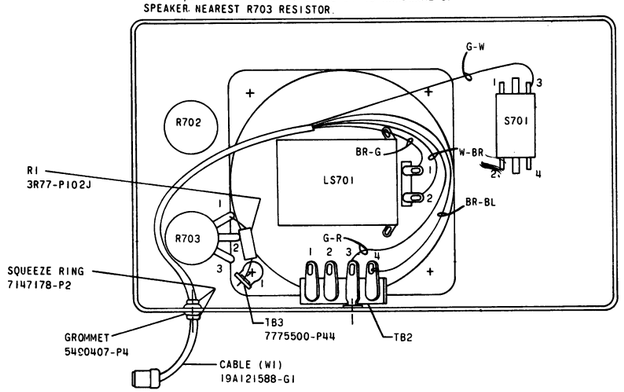
FRONT-MOUNT APPLICATION KIT
PL-19A121863-G1
(MODEL 4EC29A2 CONTROL UNIT)



STEP 1: REMOVE EXISTING GROMMENT FROM HOLE JUST BEHIND POWER CABLE HOLE ON CONTROL UNIT. ASSEMBLE GROMMET FROM KIT INTO THIS HOLE AND INSERT CABLE (W1) THRU GROMMET LEAVING APPROXIMATELY 2.5 INCHES BETWEEN END OF PLUG & GROMMET.

STEP 2: ATTACH SQUEEZE RINGS ON EITHER SIDE OF GROMMET FOR MINIMUM PLAY. OVERLAP ENDS OF RINGS TO INSURE TIGHT FIT.

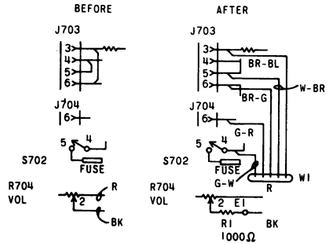
STEP 3: ASSEMBLE TB3 TO SPEAKER, USING #4-40 HARDWARE OF SPEAKER NEAREST R703 RESISTOR.



STEP 4: UNSOLDER RED WIRE AT R703-1 AND SOLDER TO TB3-1. SOLDER R1 (1000Ω) FROM TB3-1 TO R703-1. REMOVE BLACK WIRE BETWEEN TB2-4 & LS701-1.

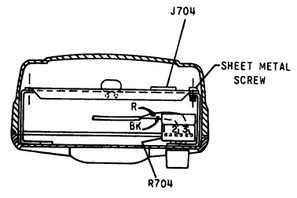
STEP 5: SOLDER ALL WIRES FROM CABLE W1 AND MAKE ALL OTHER CONNECTIONS AS SHOWN IN DIAGRAM AT LEFT.

TRUNK-MOUNT APPLICATION KIT
PL-19A121840-G1
(MODEL 4EC27A CONTROL UNIT)

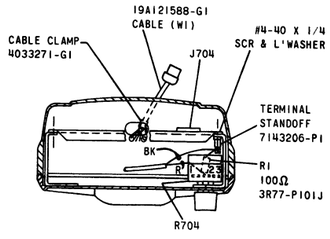


STEP 1: REMOVE SHEET METAL SCREW NEAREST J704-3, USING #4/40 X 1/4 SCREW & LOCKWASHER MOUNT TERMINAL STANDOFF IN HOLE VACATED BY SHEET METAL SCREW.

STEP 2: UNSOLDER BLACK WIRE FROM TERMINAL #2 OF R704 AND SOLDER TO TERMINAL STANDOFF. SOLDER R1 (1000Ω) BETWEEN TERMINAL #2 OF R704 AND TERMINAL STANDOFF.



STEP 3: ATTACH CABLE CLAMP TO CABLE W1 AT END OF BRAIDED AREA. RUN W1 THRU CABLE-ENTRANCE HOLE IN CASE AND ATTACH CABLE-CLAMP HOOK THRU SMALL HOLE.

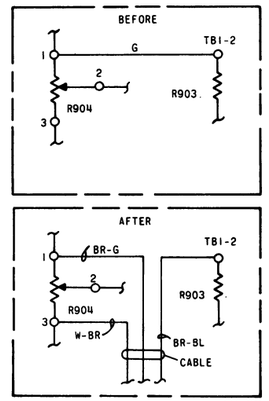


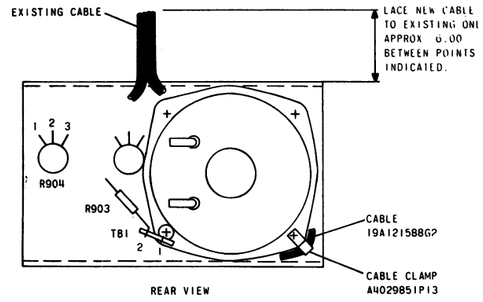
STEP 4: REMOVE JUMPER WIRE BETWEEN J703-3 & J703-6 AND SOLDER WIRES FROM W1 AS SHOWN IN DIAGRAM AT LEFT.

STATION APPLICATION KITS

DO STATION APPLICATION KIT
PL-19A121914-G1

STEP 1: MOUNT CABLE CLAMP UNDER BOLT HOLDING SPEAKER AND INSERT CABLE 12 INCHES FROM WIRE ENDS.

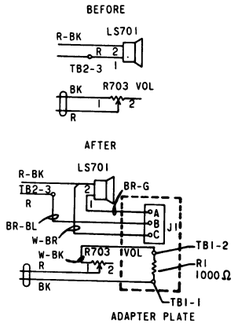


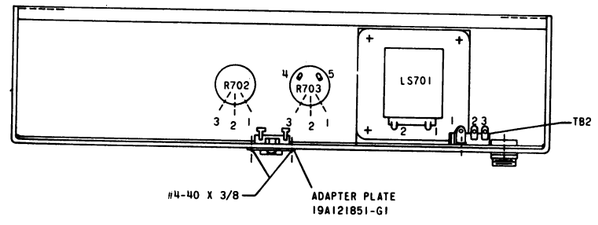


STEP 2: SOLDER CONNECTIONS AS FOLLOWS (SEE DIAGRAM AT LEFT)
BR-G WIRE TO R904-1
BR-BL WIRE TO TB1-2
W-BR WIRE TO R904-3
REMOVE GREEN WIRE BETWEEN R904-1 & TB1-2.

TI STATION APPLICATION KIT
PL-19A121855-G1
(MODEL 4EC39A10 CONTROL UNIT)

STEP 1: PLACE ADAPTER PLATE OVER RECTANGULAR CUTOUT NEAR CENTER BOTTOM OF CONTROL UNIT, WITH TERMINAL STRIP TB1 TO REAR OF UNIT AND ASSEMBLE WITH #4-40 HARDWARE AS SHOWN.





STEP 2: REMOVE RED WIRE BETWEEN LS701-1 & TB2-3.

STEP 3: UNSOLDER BLACK WIRE FROM R703-1 AND SOLDER TO TB1-1 OF ADAPTOR PLATE.

STEP 4: SOLDER ALL WIRES FROM ADAPTER PLATE AS SHOWN IN DIAGRAM AT LEFT.

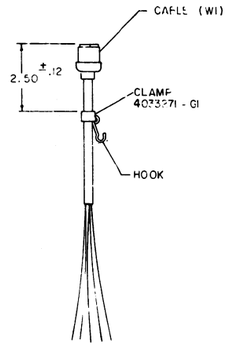
Installation Instructions

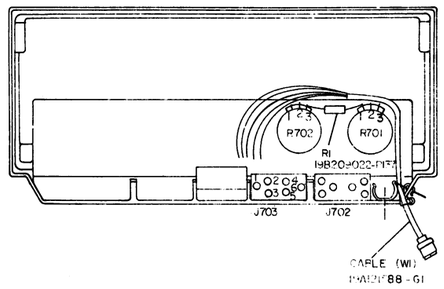
TONE APPLICATION KITS FOR PROGRESS LINE

(RC-1150A)

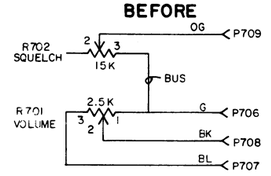
TRANSISTORIZED PROGRESS LINE APPLICATIONS

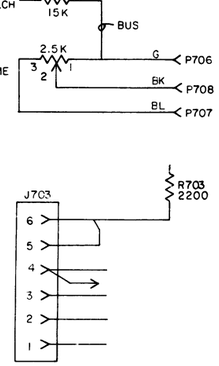
TPL- FRONT - MOUNT APPLICATION KIT
PL - 19A121841 - G1



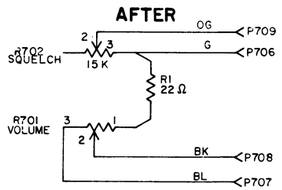


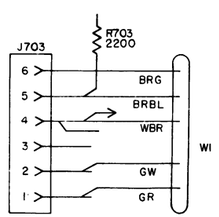
BEFORE





AFTER





STEP 1: PREPARE CABLE (W1) BY ASSEMBLING CLAMP TO IT AS SHOWN.

STEP 2: ATTACH CABLE TO CONTROL UNIT BY INSERTING HOOK (FROM INSIDE) THROUGH SMALL HOLE IN UNIT.

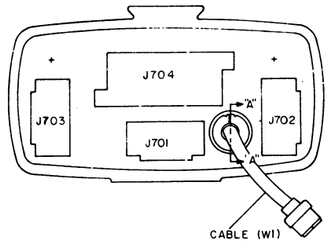
STEP 3: ROUTE CABLE AROUND R701 & R702 AS INDICATED AND SOLDER WIRES TO J703 AS SHOWN BY WIRING DIAGRAM.

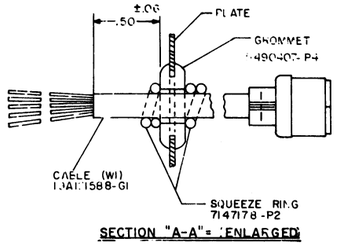
STEP 4: REMOVE JUMPER BETWEEN R701-1 & R702-3 AND TRANSFER GREEN WIRE FROM R701-1 TO R702-3. SOLDER R1 (22 Ω) FROM R701-1 TO R702-3.

STEP 5: REMOVE JUMPER BETWEEN J703-5 & J703-6. UNSOLDER R703 FROM J703-6 & SOLDER TO J703-5.

STEP 6: MAKE ALL OTHER WIRING CHANGES AS SHOWN BY WIRING DIAGRAM. SOLDER ALL ELECTRICAL CONNECTIONS.

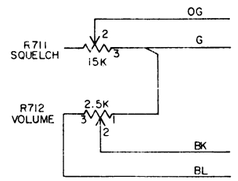
TPL TRUCK - MOUNT APPLICATION KIT
PL-19A121845 - G1

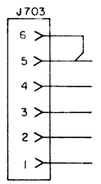




SECTION "A-A" = ENLARGED

BEFORE



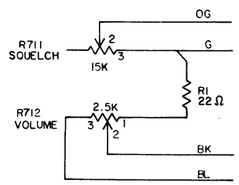


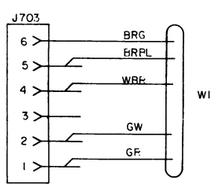
STEP 1: REMOVE PLUG BUTTON FROM HOLE (WHERE CABLE IS NOW SHOWN) AND DISCARD PLACE GROMMET IN HOLE VACATED BY BUTTON. INSERT CABLE THROUGH GROMMET AND ATTACH SQUEEZE RINGS FOR MINIMUM PLAY ON EITHER SIDE OF GROMMET. OVERLAY ENDS OF RINGS TO INSURE TIGHT FIT.

STEP 2: REMOVE JUMP WIRE BETWEEN R711-3 & R712-1 AND SOLDER R1 (22 Ω) RESISTOR IN ITS PLACE AS SHOWN IN WIRING DIAGRAM.

STEP 3: REMOVE JUMPER BETWEEN J703-5 & J703-6 AND SOLDER WIRES OF CABLE (W1) TO J703 AS SHOWN BY WIRING DIAGRAM.

AFTER





Installation Instructions

TONE APPLICATION KITS FOR TPL

(RC-1151A)

PACER & ACCENT 450 APPLICATIONS

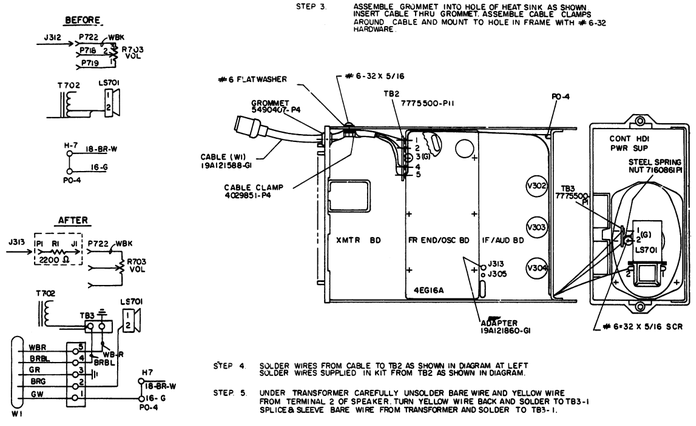
MOBILE APPLICATION KITS

PACER MOBILE APPLICATION KIT PL-19A121861-G1

STEP 1. MOUNT TB2 TO OSCILLATOR BOARD IN POSITION SHOWN BELOW WITH SCREW THAT IS USED TO MOUNT BOARD TO THE FRAME.

STEP 2. PLACE STEEL SPRING NUT ON LUG OF SPEAKER LS701 AND MOUNT TB3 TO LUG WITH 6-32 HARDWARE AS SHOWN

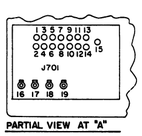
STEP 3. ASSEMBLE GROMMET INTO HOLE OF HEAT SINK AS SHOWN INSERT CABLE THRU GROMMET ASSEMBLE CABLE CLAMPS AROUND CABLE AND MOUNT TO HOLE IN FRAME WITH #6-32 HARDWARE



STEP 4. SOLDER WIRES FROM CABLE TO TB2 AS SHOWN IN DIAGRAM AT LEFT SOLDER WIRES SUPPLIED IN KIT FROM TB2 AS SHOWN IN DIAGRAM.

STEP 5. UNDER TRANSFORMER CAREFULLY UNSOLDER BARE WIRE AND YELLOW WIRE FROM TERMINAL 2 OF SPEAKER. TURN YELLOW WIRE BACK AND SOLDER TO TB3-1 SPLICE & SLEEVE BARE WIRE FROM TRANSFORMER AND SOLDER TO TB3-1.

ACCENT 450 MOBILE APPLICATION KIT PL-19A121874-G1



PARTIAL VIEW AT "A"

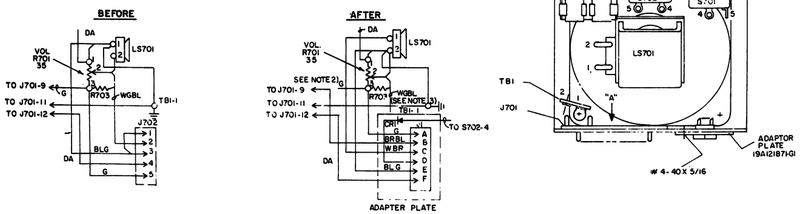
STEP 1. UNSOLDER ALL WIRES FROM J702 AND REMOVE JACK FROM CONTROL UNIT. ASSEMBLE ADAPTER PLATE (J1) IN PLACE OF J702 USING #4-40 HARDWARE AS SHOWN.

STEP 2. UNSOLDER GREEN WIRE FROM J701-9 AND TAPE BACK.

STEP 3. UNSOLDER WG-BL WIRE FROM R701-2 AND TAPE BACK.

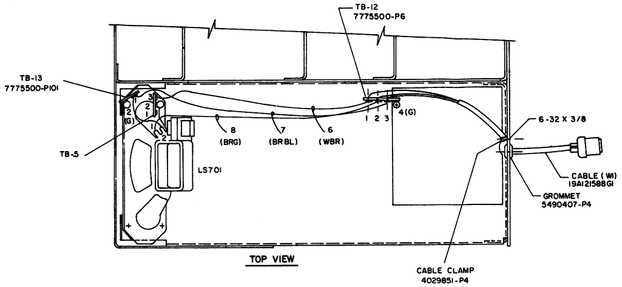
STEP 4. SOLDER DIODE (CR1) BETWEEN ADAPTER PLATE & S702-4.

STEP 5. MAKE ALL OTHER WIRING CONNECTIONS AS SHOWN IN DIAGRAM BELOW. SOLDER ALL CONNECTIONS.

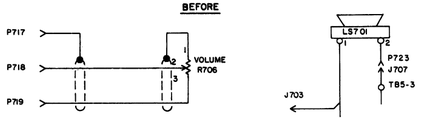


STATION APPLICATION KITS

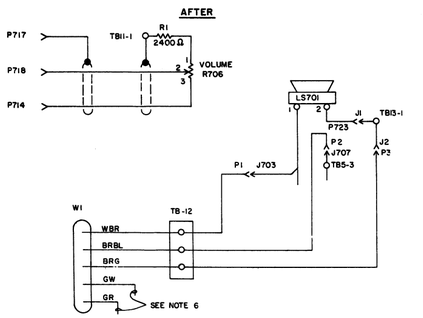
PACER STATION APPLICATION KIT PL-19A121903-G1

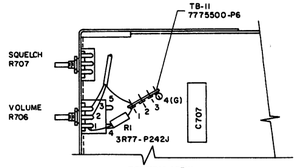


BEFORE



AFTER





STEP 1. ON BOTTOM SIDE OF POWER SUPPLY, DIRECTLY IN FRONT OF C707 INSTALL TB11 USING #6-32 HARDWARE THAT MOUNTS LS701. MOUNT TB11 SO THAT TERMINAL 1 IS NEAR VOLUME CONTROL R706.

STEP 2. UNSOLDER SHIELD FROM TERMINAL 1 OF R706 AND SOLDER TO TB11-1. SOLDER R1 (2400Ω) FROM TB11-1 TO R706-1.

STEP 3. LOOKING AT BACK PANEL, INSERT GROMMET INTO 6TH HOLE FROM LEFT. INSERT CABLE W1 THRU GROMMET LEAVING APPROXIMATELY 3 INCHES OF THE CABLE OUTSIDE THE UNIT. SLIP NYLON CABLE CLAMP ON CABLE AND ASSEMBLE TO SMALL HOLE JUST BELOW GROMMET USING 6-32 X 3/8 HARDWARE.

STEP 4. MOUNT TB12 IN POSITION AS SHOWN USING #6 SCREW THAT MOUNTS PLATE.

STEP 5. ROUTE CABLE AROUND EDGE OF POWER SUPPLY AND SOLDER CONNECTIONS TO TB12 AS SHOWN IN DIAGRAM.

STEP 6. TAPE BACK G-R & G-W WIRES OF CABLE.

STEP 7. USING UPPER 8-32 HARDWARE OF SPEAKER (DIRECTLY ABOVE TB5-2) MOUNT TB13 WITH SLIGHT DOWNWARD ANGLE. SOLDER 2 PIECES OF DB WIRE APPROXIMATELY 0.75 INCHES LONG TO TB13-1.

STEP 8. DISCONNECT GREEN WIRE FROM LS701-2 AND CONNECT TO DB WIRE AT TB13-1.

STEP 9. MAKE ALL CONNECTIONS AS SHOWN ON WIRING DIAGRAM AT LEFT, SOLDER ALL CONNECTIONS.

ACCENT 450 STATION APPLICATION KIT PL-19A121864-G1

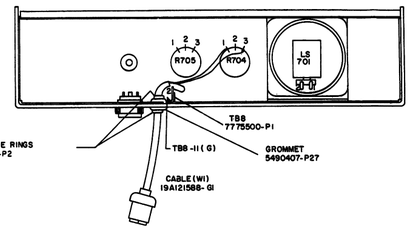
STEP 1. REMOVE PLUG BUTTON FROM HOLE LOCATED NEAR CONNECTOR J703. ASSEMBLE GROMMET INTO THIS HOLE AND INSERT CABLE W1 THRU GROMMET, LEAVING APPROXIMATELY 6.00 INCHES BETWEEN END OF PLUG AND GROMMET.

STEP 2. ATTACH SQUEEZE RINGS ON EITHER SIDE OF GROMMET FOR MINIMUM PLAY. OVERLAP ENDS OF RINGS TO INSURE TIGHT FIT

STEP 3. MOUNT TB8 USING #6-32 HARDWARE (NEAR SQUELCH CONTROL R705) THAT MOUNTS GRILLE TO FRAME

STEP 4. SOLDER BR-BL, BR-G & W-BR WIRES FROM CABLE AS SHOWN IN DIAGRAM. TIE BACK & TAPE G-W & G-R WIRES.

STEP 5. UNSOLDER #20 G-W WIRE FROM R704-3 AND SOLDER TO TB8-2.



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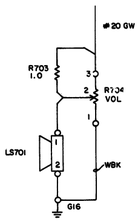

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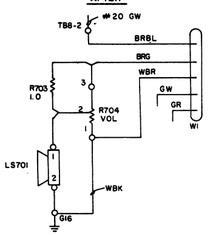


Installation Instructions

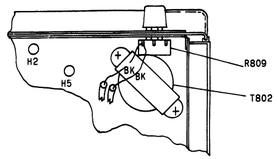
TONE APPLICATION KITS FOR G-E PACER & ACCENT 450

(RC-1152B)

RC4 APPLICATION KIT
PL-19A121908-G1
(REMOTE CONTROL UNIT MODEL 4EC28A1)

STEP 1: ASSEMBLE TERMINAL BOARD TB3 AND RESISTORS R1, R2 AND R3 INSTALL WITH JUMPERS ON THE OUTSIDE UNDER SCREW HOLDING TRANSFORMER T802 (NEAR VOLUME CONTROL).

BEFORE



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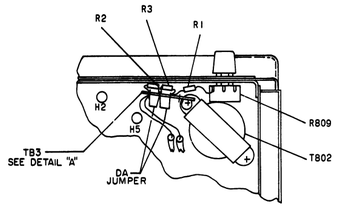
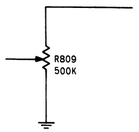
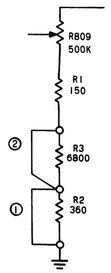


STEP 2: DISCONNECT BLACK WIRE (2) FROM VOLUME CONTROL (R809) AND ATTACH TO TOP TERMINAL OF BOARD (TB3).

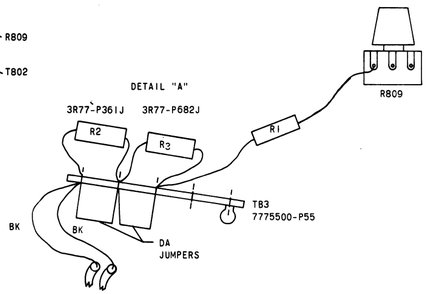
BEFORE



AFTER

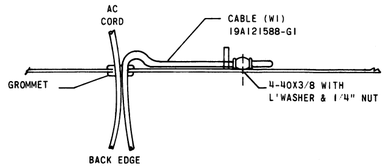


DETAIL "A"

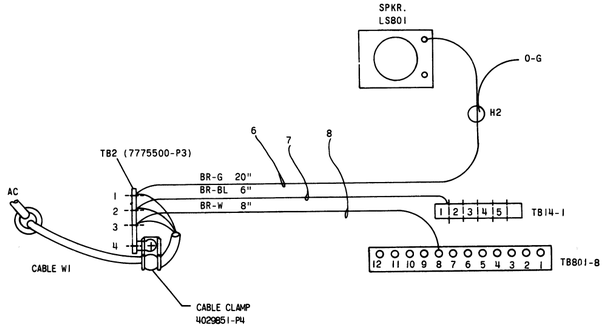


INPUT LEVEL	CLIP JUMPER
+ 10 & ABOVE	NONE
0 TO + 10	①
-12 TO 0	①&②

STEP 3: RUN CABLE THRU GROMMET WITH AC WIRE.

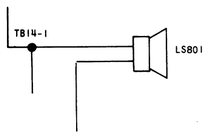


STEP 4: REMOVE SCREW NEAREST GROMMET AND INSTALL TERMINAL BOARD TB2 AND CABLE CLAMP. INSERT END OF BRAIDED PORTION IN CLAMP AND TIGHTEN. CUT WIRE TO LENGTH, FOLDING AND TAPING REMAINING WIRE.



STEP 5: ATTACH WIRE TO TERMINAL OF BOARD TB2 AS SHOWN. ATTACH SAME COLOR WIRE TO APPROPRIATE TERMINAL. DISCONNECT ORANGE AND BLUE WIRE AT SPEAKER TERMINAL AND TAPE BACK. TO THIS TERMINAL ON SPEAKER SOLDER THE BR-G WIRE. CONNECT THE BR-BL WIRE TO TB14-1 & THE BR-W WIRE TO TB801-8.

BEFORE



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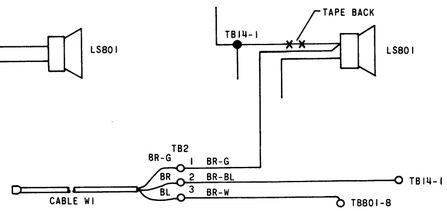
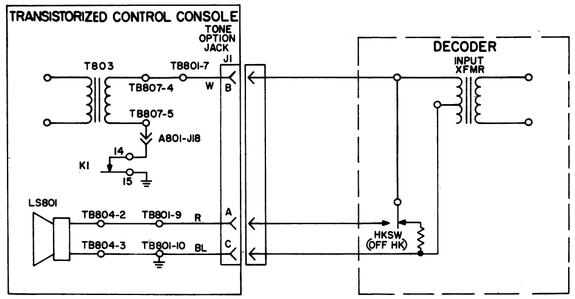


Installation Instructions

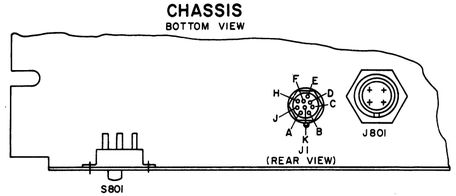
TONE APPLICATION KIT
FOR TCC & RC4

(RC-1149B)

TRANSISTORIZED CONTROL CONSOLE
APPLICATION KIT PL-19A122250-G17
(MODEL 4EC71A10)



(19B205380, Rev. 2)



CONNECTIONS CHART		
FROM	TO	LEAD COLOR
J1	TB801-7	WHITE
J1	TB801-9	RED
J1	TB801-10	BLUE

(19B205381, Rev. 2)

ORDERING SERVICE PARTS

Each component appearing on the schematic diagram is identified by a symbol number, to simplify locating it in the parts list. Each component is listed by symbol number, followed by its description and G-E Part Number.

Service parts may be obtained from Authorized G-E Communication Equipment Service Stations or through any G-E Radio Communication Equipment Sales Office. When ordering a part, be sure to give:

1. G-E Part Number for component
2. Description of part
3. Model number of equipment
4. Revision letter stamped on unit.

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance.

Should further information be desired, or should particular problmes arise which are not covered sufficiently for the purchaser's purposes, contact the nearest Radio Communication Equipment Sales Office of the General Electric Company.

MAINTENANCE MANUAL

LBI-3760

DF-5021

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